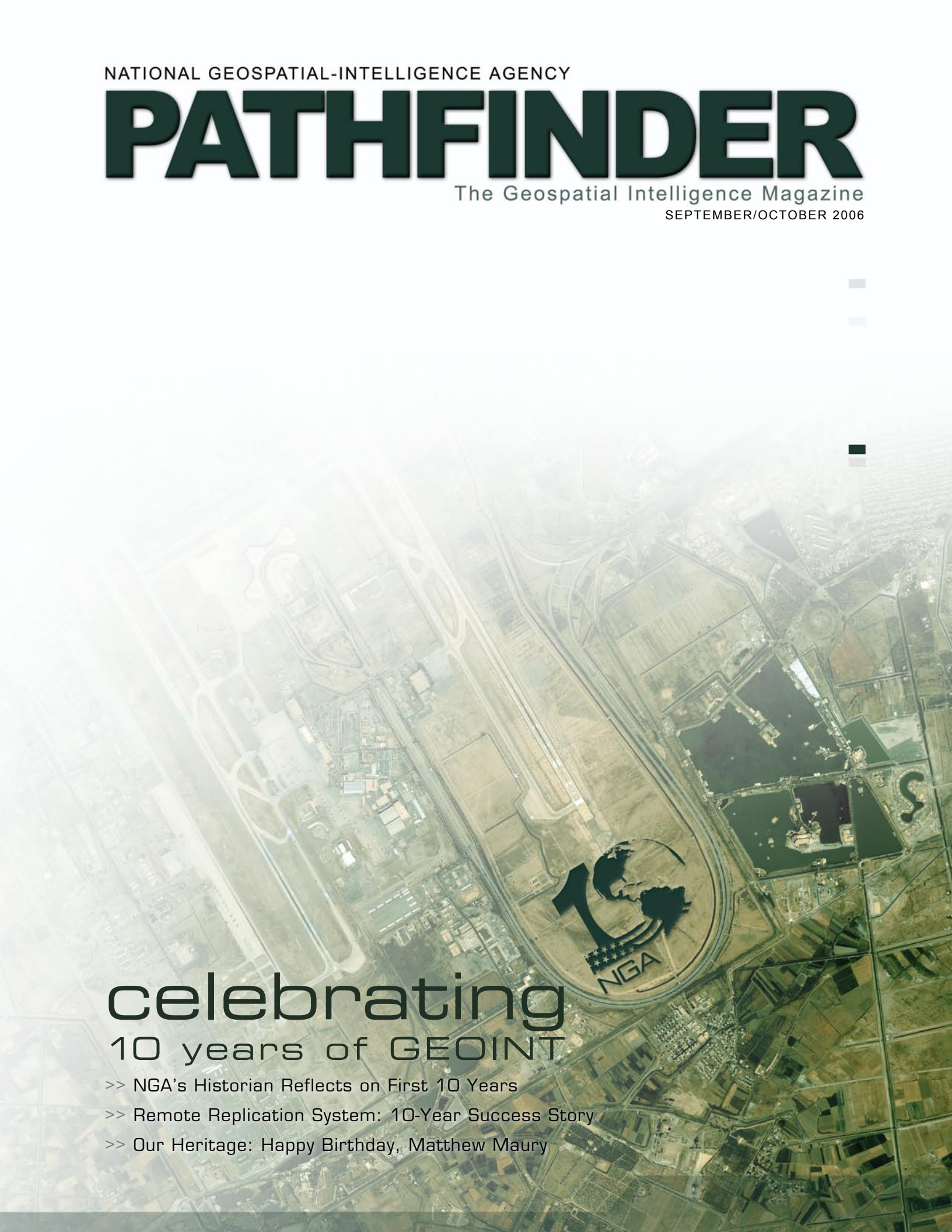
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

PATHFINDER

The Geospatial Intelligence Magazine

SEPTEMBER/OCTOBER 2006



celebrating
10 years of GEOINT

>> NGA's Historian Reflects on First 10 Years

>> Remote Replication System: 10-Year Success Story

>> Our Heritage: Happy Birthday, Matthew Maury

Contents

PATHFINDER
September/October 2006
Vol. 4, No. 5

ON THE COVER

Like feature data placed on an image to create geospatial intelligence, NGA's 10th anniversary logo appears over an image of Baghdad International Airport. In September NGA begins a yearlong celebration of the convergence of the geospatial intelligence and imaging disciplines. Image ©2003, DigitalGlobe. (All Rights Reserved.)

GETTING PUBLISHED

All members of the geospatial intelligence community are welcome to submit articles of community-wide interest. Articles are edited for style, content and length. The copy deadline is the last Friday of the third month before publication. For details on submitting articles, send an e-mail to pathfinder@nga.mil.

Published by the National Geospatial-Intelligence Agency

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Anniversary Issue

Letter to our Readers

For our anniversary issue, the Pathfinder turned to NGA's Historian for help in reflecting on the Agency's first 10 years. With the challenges we face today, in providing GEOINT to meet national security demands, and a massive relocation of our Washington, D.C., facilities just over the horizon, this is no time to rest on our laurels. Yet, to move ahead without looking back also would seem imprudent.

In his lead feature article, our historian, Dr. Martin Gordon, reminds us that NGA was the result of "lessons learned." While this issue is not an attempt to dissect the past, we do want to reflect on what we've accomplished before moving on to "the next stage," as Dr. Gordon puts it.

Before we begin our eclectic retrospective, our new Director, Vice Adm. Robert Murrett, introduces himself to our readers with his first NGA Director's column. Touching upon the anniversary theme, he notes that 10 years ago geospatial intelligence (GEOINT) had barely emerged, along with the establishment of the National Imagery and Mapping Agency. Today we witness daily advances in GEOINT as a result of leveraging our imagery and geospatial expertise.

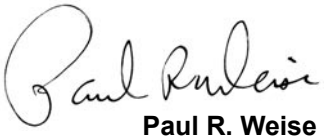
How GEOINT gets to decision-makers and operational forces in today's environment more and more occurs via the Internet. NGA's Remote Replication System (RRS) takes advantage of the Internet and other sources to create products on site wherever it is needed. Barely older than the Agency, the RRS has served during many historical events of the last 10 years, from noncombatant evacuations to hurricane recovery, as recounted by RRS team member Jeffrey Hunter.

Our legacy goes back much further than the history of this Agency, however. Safety on the high seas was the concern of pioneer marine analyst Matthew Maury, who was also a Civil War veteran. His extraordinary efforts led directly to the maritime safety mission of NGA today. Veteran marine analyst and former public affairs staff officer Howard Cohen tells Maury's unusual and inspiring story.

We also celebrate some Agency triumphs during the last 10 years through pictures, with a photographic essay by public affairs staff officer Juanita Hartbarger.

In our 21st Century department, Mimi Janes explains how NGA's Production Management Alternate Architecture will move the Agency to the future. In another department, we discuss the significance of NGA certifications by the International Standards Organization.

The Pathfinder's technology issue is planned for November-December. Facing forward as it addresses how the NGA is rising to meet its challenges, this issue should serve as an interesting counterpoint to the current issue's celebration of how far we've come.



Paul R. Weise
Director, Office of Corporate Relations

On My Mind

10 Years of GEOINT

By Vice Admiral Robert B. Murrett, Director, National Geospatial-Intelligence Agency

This year, NGA celebrates the 10th anniversary of geospatial intelligence (GEOINT). When our predecessor, the National Imagery and Mapping Agency, was established 10 years ago, it centralized imagery and mapping responsibilities across the intelligence and defense communities and officially consolidated this innovative discipline. Over the years, GEOINT has served our nation and the international community well, making tremendous contributions to decision-makers and warfighters as they have tackled some of the most difficult intelligence and defense challenges of our time.

As we move toward the future, NGA will continue to build on its direct linkage with the intelligence and defense communities to produce the GEOINT products, services and analyses necessary to support intelligence and defense missions. We are the beneficiary of clear and relevant guidance from the Department of Defense and the Office of the Director for National Intelligence on how to chart a trail into the future. The recently promulgated Defense Intelligence Guidance reminds us that the war against terrorism will be a "long war" and reinforces our critical task to provide the intelligence necessary to help predict, penetrate and pre-empt threats to our national security. Similarly, our National Intelligence Strategy states in clear and unambiguous language the importance of building robust intelligence capabilities that honor our nation's tradition of teamwork, partnerships and technological innovation.

While our guidance is clear, the challenges we face as we fulfill our mandates are also apparent. Our nation, as a whole, faces the increasingly diverse and ever evolving threat of our adversaries, and NGA and the rest of the National System for Geospatial-Intelligence (NSG) community will have to cope with dramatically changing operating environments.

Nonetheless, challenges are meant to be surmounted. GEOINT's rich history of support to our country's most difficult missions is proof. NGA will continue to strengthen its partnerships and collaborations with other intelligence, defense and civil organizations and with industry, academia and international partners to produce the most robust GEOINT possible. NGA will also continue focusing on attracting, developing and sustaining a GEOINT workforce with the unique skills and competencies required to meet current and future intelligence challenges. Our Agency will continue to move forward with the development and acquisition of the revolutionary technical solutions necessary to advance national security objectives. And, in close cooperation with other combat support agencies, we will continue to lead the NSG community to ensure that it provides the indispensable, timely, accurate and relevant GEOINT that will carry us successfully into the future.

Over the next 10 years, GEOINT will continue to be vital to every facet of our nation's national security strategy. It will remain a crucial component of our response to serious intelligence and defense problems. I look forward to working with you as we chart a future course for this extraordinary discipline.

Robert B. Murrett
Vice Admiral, USN
Director

NGA's Historian Reflects on First 10 Years

By Dr. Martin K. Gordon

On Nov. 24, 2003, President George W. Bush signed the 2004 Defense Authorization Bill, a provision of which authorized use of the name National Geospatial-Intelligence Agency, replacing the name National Imagery and Mapping Agency (NIMA). This change marked the latest step in the evolution of this intelligence and defense support agency that formally began Oct. 1, 1996.

Converging Trends and Lessons Learned

Converging trends in technology, Congressional interest in economy, and the agreement of the Central Intelligence Agency and Department of Defense, influenced by lessons from Operations Desert Shield/Desert Storm, all came together in 1996 to establish NIMA. The Defense Mapping Agency (DMA), Central Imagery Office, Defense Dissemination Program Office and National Photographic Interpretation Center all were merged into NIMA. Congress also brought selected imagery-related parts of the CIA, Defense Airborne Reconnaissance Office, Defense Intelligence Agency and National Reconnaissance Office into NIMA. The National Photographic Interpretation Center in the early 1960s had absorbed staff from the Defense Intelligence Agency and from the Army, Navy, and Air Force. DMA itself was formed after the Vietnam War from the mapping, charting and geodesy functions of the Army, Navy and Air Force. Thus, the establishment of NIMA reflected government-wide trends to consolidate functions for the purpose of more efficient use of technology and the resulting dollar savings.

NIMA's Accomplishments

The years 1996-2003 saw these organizations learning to work together. This was especially hard, as many of the workforce including supervisors had believed right up to NIMA's standup that this event would never happen.

During those years, NIMA continued the work of its predecessors, influencing world events, for example, by creating animated renditions of imagery and geospatial data that allowed users to visualize inaccessible terrain. This enabled NIMA to assist in resolving international boundary disputes, for example, the disputed boundaries between Peru and Ecuador and Israel and Lebanon. NIMA also provided maps and visualizations that gave the Dayton Peace accord diplomats from the Balkans graphic views of the boundary locations they were debating. In February 2000, the Space Shuttle Endeavour's Shuttle Radar Topography Mission (SRTM) provided the most detailed measurements of our planet's elevations ever gathered. In addition, NIMA contributed to homeland-defense and disaster-relief efforts, helped the armed forces overseas and developed newer aeronautical charts.

After the attacks of Sept. 11, 2001 NIMA took on additional responsibilities. It contributed to homeland security, helped even more in safeguarding events in this country and overseas, assisted the armed force's work in Iraq and Afghanistan, and worked with domestic relief agencies after major disasters such as Hurricanes Katrina and Rita.

NGA's first historian, Dr. Martin Gordon, stands in front of a pictorial display of the Agency's chronological history in a photo taken in 2001.

Uniting Under a New Name

The Agency's 2003 name change reflected both the new product NGA was developing as well as the growing unity of its parts. Geospatial intelligence (GEOINT) combined traditional geospatial, imagery and other resources to present digital representations of world locations and both natural and manmade activities. NGA and its predecessors had been developing this capability to process, interpret and transmit information digitally from the first time these technologies became available. This evolution meant that NGA could keep ever-growing masses of information up to date, quickly transmitted, easily stored and efficiently used by our national, military and civilian customers. The NGA Maritime Division's conversion of its historic products, nautical charts and Notices to Mariners to digital formats marked a stage, not a culmination, within this larger process.

September 2006 marks the completion of the 10th year of this coming together of the geospatial and imagery disciplines. NGA is celebrating this anniversary with publications and events throughout the anniversary year, starting this September and ending next September. These celebrations focus on reaching this stage in the evolution of GEOINT, not on the institutional structures within which this work occurs. Having reached this stage, we have much to celebrate as we reflect on our evolution so far and look forward to reaching the next stage.

With its roots in the Lewis and Clark mapping and intelligence expedition of 1803-1806, this new Agency's work continues the traditions of its predecessors in meeting national and military needs as old as the nation itself.

Four Influences

Airplanes, Cameras, Computers and Cost Cutting Set the Stage for NGA

A story that began with President Thomas Jefferson's 1803 classified commissioning of the Lewis and Clark and their Corps of Discovery is not over. Planned and funded secretly, this was the first large government effort to explore the new lands President Jefferson had purchased from France, the Louisiana Purchase. With open and classified missions, Lewis and Clark created products that included new maps of the territory reflecting their adventures.

As the United States grew so did its needs for geospatial information and intelligence. National, military, naval and commercial leaders needed to know what useful information could be brought back from both the lands to the west and waters around the world. The Army and the Navy responded with research expeditions and with organizations in Washington, D.C., that could both organize this research and then process and distribute its knowledge.

In 1861 a great Civil War began across the country. Presidents and generals North and South turned to the technology of ballooning to help them see what enemy forces were beyond their own line of sight. Useful early in the war, ballooning was virtually abandoned before 1865, due in part to bureaucratic resistance and trouble recruiting officers to ascend in the balloons. But the desire to move and see above the Earth's surface continued.

Technology, as it always does, continued to evolve. By 1914, the year the First World War started, two rapidly improving inventions began to meet that desire. The airplane's first military use was reconnaissance, the ability to move and see above the Earth in a systematic manner. The camera, an earlier innovation, enabled those flying to record what they were seeing in a systematic manner. Returning airmen could then provide photographs to waiting development laboratories that in turn would rush their products to headquarters staffs. Interpreters then sent important current maps and intelligence to their customers. As aerial platforms and later satellites continued to advance in usefulness, this technology of organized movement above the Earth, along with that of the cameras and their multi-spectral recording offspring, remained two great influences upon NGA.

In 1941, the United States entered into the Second World War. Airplanes now flew higher, faster and over the greater distances of this conflict. Cameras recorded the land below at higher speeds and with more panoramic views. On the ground, processing and interpretation equipment and techniques grew to match. By War's end in 1945, the third great ongoing technological influence on NGA, the computer with its advancing digital capabilities, had established itself as a necessary tool. Likewise the fourth ongoing influence, the Congressional desire to economize after the end of a war, reduced both human and industrial resources. Actually the oldest of these four great influences, dating back to reductions in the Army and Navy after the American Revolution, this desire greatly influenced the institutions of geospatial intelligence. The merger of Army, Navy, and Air Force geospatial organizations into DMA in 1972 illustrate this point. This pattern also contributed to the coming together of organizations into NIMA in 1996.

Convention Builds Relationships, Shares NGA Capabilities

By Julia Collins

Over 250 NGA employees attended the 2006 ESRI International User Conference Aug. 7-11 in San Diego. The conference included an opening session for over 15,000 attendees, a map gallery exhibit, an exhibit hall with industry vendors and government agencies, and paper sessions presenting geographic information system (GIS) examples from numerous organizations.

NGA participants had the opportunity to share some of NGA's unique capabilities and learn about new GIS technologies.

Building Relationships

Making connections with NGA partners was a key benefit for Agency attendees.

"It's important for NGA employees to attend training opportunities such as the ESRI Conference because it helps us build relationships with our customers," said a geospatial intelligence analyst assigned to NGA's Office of the Americas.

"Some of our customers do not understand what we do, and this is an opportunity for us to share our capabilities," she said. "It also helps us anticipate their needs. It's our

A technology demonstration is given at the NGA Defense Showcase Exhibit.

Photo by Julia A. Collins

relationship with our partners that helps us improve what we provide."

Learning New Techniques

The ESRI conference offered educational tracks to follow, such as Defense and Homeland Security, which helped attendees focus on updates in their particular areas.

Several NGA attendees noted the added benefit of being able to sit down with on-site contractor representatives to help troubleshoot issues and provide feedback concerning GIS products. "I have the chance to get a greater understanding of a new product," said an analyst in the Central Asia Special Issues Branch.

The user conference also gives federal employees an opportunity to see GIS-related demonstrations by local government agencies and private sector companies. In addition, the ability to gather information from other vendors and learn new software techniques helps NGA employees improve the work they are doing, analysts said.

Sharing Capabilities

Several NGA employees brought their unique skills to the table at the ESRI convention through paper sessions held over a three-day period. These sessions demonstrated the broad scope of NGA capabilities including cultural intelligence, boundary and terrain modeling, special event security, and transformation of aeronautical and maritime navigation charts to a digital format. They also served as evidence of the wide spectrum of NGA's partners including officials from the Department of Homeland Security, the U.S. military and local communities.

NGA's Palanterra™ team provided live demonstrations using a fictitious scenario to show the program's ability to provide a common operational picture during a special security event. The program has been used to provide a central point of reference for special events including Super Bowl games and the Olympics.

NGA Recognition

NGA's former director received an award for NGA's role during the aftermath of Hurricane Katrina. Retired Air Force Lt. Gen. James R. Clapper Jr. received the "Making a Difference" award at the plenary session for the "vast improvements and increased use of GIS capabilities" he made during his tenure at NGA, said ESRI President Jack Dangermond.

Dangermond acknowledged NGA's outstanding response to rescue and recovery operations following Hurricane Katrina. He particularly noted Clapper's direct involvement in expediting the efforts of NGA employees to assist rescue workers in meeting the many challenges faced along the Gulf Coast.

ESRI 2007

Plans are already under way for NGA's participation in the June 2007 ESRI International User Conference which will be held at the same location.

A conference attendee views a Palanterra demonstration in the Map Gallery.

Photo by James G. Mohan

Remote Replication System: 10-Year Success Story

By Jeffrey D. Hunter

The mission of NGA's Remote Replication System (RRS) is to provide custom geospatial intelligence (GEOINT) solutions on demand for military and civilian customers across the globe. A deployable system that scans hardcopy or reads digital files to produce and print unique high-resolution maps, the RRS is one of NGA's most responsive and adaptable support services. With the reputation of a workhorse, it has supported special operations, military exercises, humanitarian efforts, crisis activities and more—all in real time. Fundamental to the system's success is the expertise and creativity of the analysts who operate it.

A year older than NGA, the RRS celebrated its 10th anniversary last year. The system can stand alone or access and transmit data over networks like the Defense Department's Global Broadcast system. Besides printing maps, it creates digital media and provides an archiving capability.

Deployed personnel can reach back to NGA to access its Agency-based RRS facilities. Other systems support military operations on site—in the United States as well as abroad. When units deploy, the RRS and its supporting analysts are often tapped for support. RRS teams serve all unified commands, subordinate level

Photo by Federal Emergency Management Agency

A geospatial analyst (right) explains the format of a ground search map produced on the Remote Replication System to the head of a search crew in Nacogdoches County, Texas, following the space shuttle disaster.

units, the Intelligence Community and many other federal agencies.

The RRS was the first full NGA geographic information system (GIS) deployed to the field in support of our military. In 1995, it supported the Dayton Peace Accords, printing maps of Bosnia and Herzegovina that helped determine where boundaries should go. In a follow-on to this successful deployment, the RRS deployed in 1996 to Taszar, Hungary, in support of the Bosnia/Herzegovina Stabilization Force. During this deployment, RRS analysts created land-mine charts, custom-route maps and planning maps and graphics for Implementation Force (IFOR) troops led by NATO, the United Kingdom and the United States. They also responded to emergency situations, most notably providing the initial search-and-rescue maps when Commerce Secretary Ron Brown's plane crashed on approach to Dubrovnik, Croatia. Afterward, the analysts supported the crash investigation team.

10 Years of Success

An abbreviated list of RRS activities since its introduction in 1995 reads like a "what's what" of world events:

In 1996, the RRS was called upon to support the Winter Olympics in Sapporo, Japan.

Shortly after the first shipboard system was deployed on the USS Kearsarge, the ship was directed to Freetown, Sierra Leone, where the RRS was used to support a noncombatant evacuation operation. On May 31, 1997, Marines on the USS Kearsarge rescued 2,500 Americans and foreign nationals from more than 40 countries, relying heavily on the RRS to guide pilots in evacuating helicopters.

From June through December of 1997, the RRS deployed to support U.S. Southern Command's closing of its bases in Panama. Analysts created maps of unexploded ordnance that assisted in U.S. disposal negotiation agreements.

In 1999 the RRS supported the papal visit to St. Louis, and the next year it supported elections in Haiti.

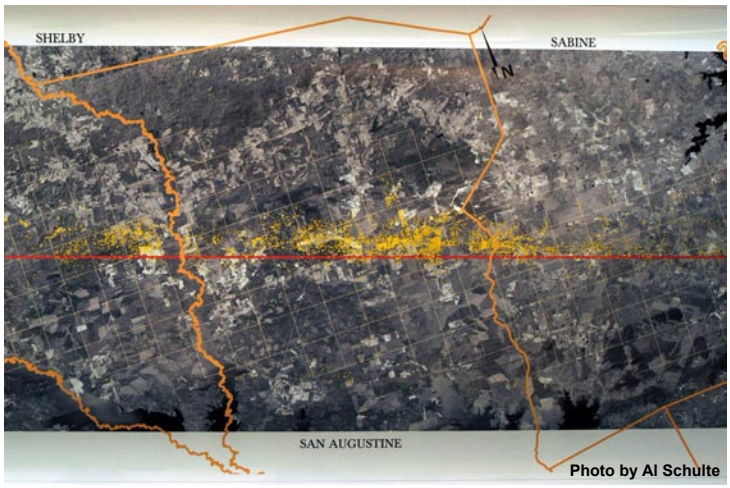
In 2002 the RRS was deployed to Turkey to support Operation Iraqi Freedom (OIF). Support for Operation Enduring Freedom (OEF) continues from the RRS site in Bahrain.

When the Columbia space shuttle disaster occurred in 2003, the Federal Emergency Management Agency (FEMA) called for a deployable resource to support recovery efforts. Two RRS operators deployed to Lufkin, Texas, almost immediately and began providing critical support 24 hours a day, seven days a week. They produced several specialized products and generated approximately 300 plots a day. The total number of hard copies was around 15,000.

The RRS supported a search-and-recovery area of 10 by 260 miles, creating a special image map that covered the debris field. Data collected from Global Positioning System receivers was ingested by RRS analysts and used to produce the map. The physical size of the map was over 27 feet long. As a result of the superb support provided during the shuttle recovery FEMA put the RRS in its emergency-response plan.

In 2004, an RRS analyst deployed to Guantanamo Bay, Cuba, to provide technical expertise to the NGA team supporting prisoner interrogations.

For the past two years the RRS was deployed to South Korea in support of the joint military exercise Ulchi-Focus Lens (UFL). An RRS analyst will again deploy with the system to support UFL 2006.



The Remote Replication System was used in the field to produce a space shuttle recovery map following the Columbia disaster in 2003. A yellow dot indicates a "find." A red line marks the Columbia's overhead path as the shuttle broke up. The orange lines are county boundaries.

Deployments in 2005 included Baton Rouge, La., for Hurricane Katrina/Rita relief. Operating as part of a FEMA GIS support team, the RRS played an integral part in supporting the many organizations and first responders involved in the hurricanes' aftermath. Members of the RRS provided resources to and worked in conjunction with NGA imagery analysts. When new flight video was obtained the RRS team added a video editing and image capture capability to their repertoire. VHS and digital videos were copied and forwarded to other NGA and non-NGA assets. Analysis of the videos was performed, still images extracted and preliminary reports generated.

An RRS team also deployed to Guatemala in 2005 to support humanitarian relief provided by U.S. Southern Command.

Most recently, NGA used its RRS assets in Italy to support the 2006 Winter Olympics.

Special Support

The support provided by an RRS varies with the customer base at any particular location. At NGA, for example, analysts specialize in preparing packages for noncombatant evacuation operations. A site in Europe supports the map server of the U.S. European Command (EUCOM), while a unit located at a stateside command provides burial-at-sea charts. The memorial charts are made up for presentation to families whose loved ones wee buried at sea and include date and location of the burial.

When the Army's 309th Military Intelligence Battalion needed a large map for tactics training, RRS analysts created a canvas floor map over 12 by 14 feet in size. Instructors use the map in several courses for operation scenarios.

RRS analysts are also active in training U.S. military customers and coalition members on how to use NGA maps and data.

Widely recognized and highly praised by customers, the RRS is major success story for NGA. The RRS Support Team can proudly look back on more than 10 years of providing innovative, on-demand customer support. There's no doubt that the RRS will continue its extraordinary support to NGA customers worldwide in the future.

Our Heritage

Happy Birthday, Matthew Maury

By Howard Cohen

This year marks the bicentennial of Matthew Fontaine Maury's birth. Maury, who was born on Jan. 14, 1806, and died on Feb. 1, 1873, was an American original who wore many hats throughout his career as a naval officer, pioneer, superintendent, scientist, author, lecturer and educator. He was also a leader of the Confederate navy.

Photo courtesy of the Virginia Public Library

Maury was a distinguished scientist in the mid-19th century and invented an electrically detonated, floating mine for the Confederacy.

From its inception, the United States has relied upon brave individuals willing to risk life and fortune to explore uncharted territory. Explorers such as Lewis and Clark led expeditions through the Louisiana Purchase, aiding what became the great western migration across the North American continent.

Their reports, maps and artwork graphically and accurately depicted the little-known territory through which they traveled. Indeed, the Lewis and Clark Expedition is considered by many to be the first nationally sponsored geospatial intelligence mission, chartered to provide information about unknown territory through the use of maps, charts and drawings.

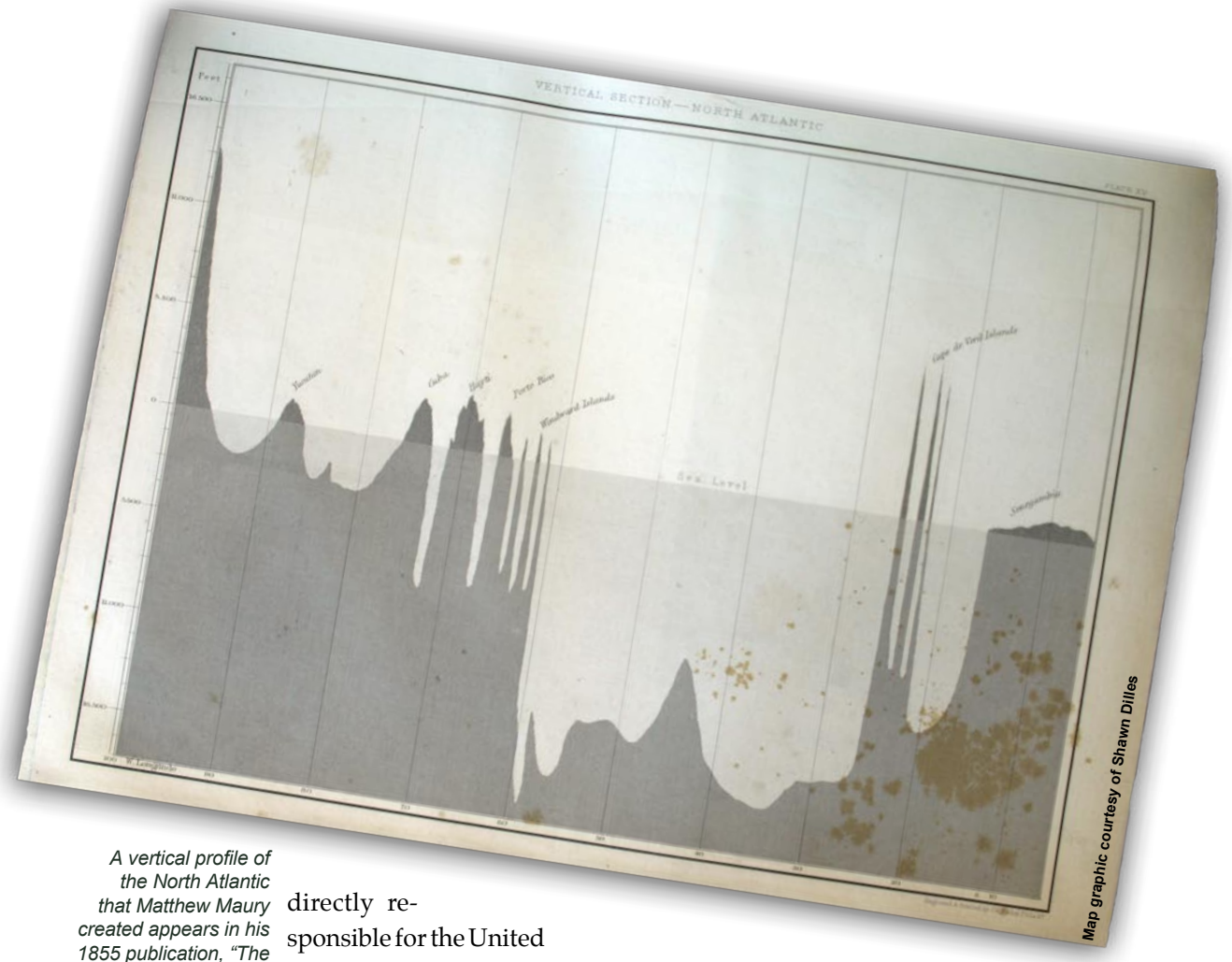
American explorer John Charles Fremont (1813-1890) also played a vital role; he was nicknamed "the Pathfinder" in acknowledgment of his expeditions to map the American West between 1838 and 1854.

However, as the American westward expansion grew, an equally vital exploration, led by pathfinder Matthew Maury, was taking place on the world's oceans.

NGA proudly traces its lineage to these early explorers and is honored to have Maury Hall and the Fremont Building named after "pathfinders."

Efforts Bolster Naval Power

Maury applied his expertise to charting the maritime territory both along the coastlines and on the open sea. His efforts were



Map graphic courtesy of Shawn Dilles

A vertical profile of the North Atlantic that Matthew Maury created appears in his 1855 publication, "The Physical Geo-graphy of the Sea." The spikes are islands in the ocean. The book also contains the first bathymetric chart published and earned Maury the title "Father of Oceanography."

directly responsible for the United States' emergence as a powerful seafaring nation unequaled in its knowledge of the Earth's oceans, winds and currents.

Maury is known by several titles, all earned as a result of his work in several fields. To the mariner, he is forever known as "Pathfinder of the Seas," a title he earned for his role in developing Wind and Current Charts in 1847, the predecessors of today's NGA Pilot Chart Atlas.

He was perhaps the quintessential marine analyst, as he "analyzed and evaluated" thousands of ships' logbooks that had been stored, by regulation, in Navy warehouses. By comparing different logs on any given route, he could deduce areas of wide differences and recommend certain areas of the oceans that should be avoided at different times of the year.

Today, NGA marine analysts embody Maury's analytical skills by collecting, analyzing, maintaining and disseminating navigation safety information to the Agency's customers, the Navy and other NGA mission partners.

Maury also collected astronomical data and began cataloging the stars because of his belief that the United States should not be dependent upon foreign calculations and celestial observations. By 1849, his astronomical observations were sufficiently complete for him to establish the American Nautical Almanac Office.

Founder of Naval Meteorology

Maury is considered the founder of naval meteorology because he conceived the idea of a universal system of meteorological observations on both land and sea. In 1853, he organized and represented the United States in the first International Maritime Meteorology Conference in Brussels. This led to uniform weather-reporting systems for 13 nations.

The Matthew Maury Monument stands along the historic parade of statues on Monument Avenue in Richmond.

Photos by John Iler

His 1855 publication "Physical Oceanography of the Sea" is considered the first modern textbook of oceanography and won Maury international fame, along with the title "Father of Oceanography."

Maury, along with his assistant John Mercer Brooke, played a significant role in developing a method for deep-sea sounding and bottom profiling of the ocean.

In 1858, this bathymetric data was instrumental in determining the location between Newfoundland and Ireland for the first trans-Atlantic cable. Cyrus Field, a U.S. financier and one of the founders of the New York, Newfoundland and London Telegraph Co. formed to carry out the project, was a driving force to have a trans-Atlantic connection. He said in a banquet celebration after the laying of the first trans-Atlantic cable, "I did the work, England gave the money, but Maury furnished the brains."

NGA continues Maury's bathymetric endeavors. NGA bathymetrists evaluate and extract hydrographic and bathymetric data to support safety in maritime navigation and create geospatial graphic displays and textual reports of intelligence data and information to meet customer requirements.

NGA Bathymetric Contour Charts play a vital role in underwater navigation and enable Navy submarines to support our nation's interests around the world.

Served Confederacy

Maury was a man ahead of his time, yet he lived within his time. As a native Virginian, he sided with the South at the outbreak of hostilities, and on April 20, 1861, he wrote to President Lincoln and resigned his commission in the Navy.

During the Civil War, Maury was the head of the Coastal and Harbor Defenses for the Confederacy. He was responsible for developing the first electrically controlled submarine mine used in warfare. In 1862, after completing this project, he went to England to procure ships for the Confederate navy.

He did not return to the United States after the war but remained abroad until he was pardoned in 1868 by President Johnson. He then entered academic life and served as professor of physics at the Virginia Military Institute until his death in 1873. Maury is buried in Hollywood Cemetery in Richmond.

Maury's daughter, Diana, described her father in his prime as only a daughter could: "a stout man, and about 5 feet 6 inches; he had a fresh ruddy complexion, with curling brown hair, and clear, tender, blue eyes. His massive head and strong neck surmounted broad and square shoulders, and a chest deep and full. His arms were long and strong, with hands small, soft and beautifully formed; he was apt to use them in graceful gestures while conversing."

Because of his innumerable contributions in so many diverse and important fields of study, Matthew Maury is memorialized in many ways. From naval ships to buildings, the name of Matthew Fontaine Maury remains forever embedded in the American memory, a tribute to his contribution to all seafaring nations.

So, happy 200th birthday, M.F. Maury ... happy birthday.

This article was adapted from the introduction to the forthcoming NGA booklet "Tributes to M.F. Maury: The Quintessential Marine Analyst," by Howard J. Cohen. The booklet is expected to be available later this year and can be downloaded from www.nga.mil/maritime. This article appeared in the Washington Times June 25, 2006.

celebrating 10 years of GEOINT

By Juanita Hartbarger

Mapping... charting... geodesy... imagery analysis... imagery intelligence. These disciplines taken together make up geospatial intelligence, or GEOINT, and GEOINT is our job.

NGA's mission is to provide accurate, timely, and actionable GEOINT to this nation's warfighters and decisionmakers.

Ten years ago, the various imagery and geospatial disciplines within the Intelligence Community (IC) were brought together into a single organization, NGA's predecessor, the National Imagery and Mapping Agency. Since then, our organization, a combat support agency of the Department of Defense, has evolved into an increasingly valued team member within the IC. Our skills, technologies, and expertise have also made us an important partner in humanitarian relief efforts at home and abroad.

Whether providing tactical support to our forces on the ground and strategic support to our military and civilian policymakers, or critical geospatial information in support of humanitarian efforts in the aftermath of a hurricane, a tsunami or an earthquake, today's NGA is the lead agency in the development and dissemination of geospatial intelligence, as these pictures and graphics illustrate.

DoD photo by Helene Stikkel

Photo by Craig Pearson

Photo courtesy of DoD

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Photo by Rob Cox
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Photo courtesy of the Department of the Army

21st Century

PMAA System Moves Agency Into the Future

By Mimi Janes

NGA's Production Management Alternate Architecture (PMAA) addresses the need for tool sets that manage both geospatial production and the procurement of the imagery and data used in production.

The PMAA supports the National System for Geospatial-Intelligence; external and internal customers use the architecture to enter and track production requests. PMAA also supports NGA's GeoScout modernization program and is targeted to become subsumed by the GeoScout architecture in fiscal 2009-2010.

The PMAA grew out of a study in 1999 to determine if there were any commercially available products that could aid the Agency's production management tasks. The results indicated that multiple products could be used and integrated into a single architecture to accomplish the tasks. In 2000, the first formal release of the PMAA was delivered.

Through the PMAA, users have access to sources stored in libraries as well as new supplies from multiple sources including commercial providers. It also links production systems like the NGA Exploitation System and Imagery Exploitation Capability. With the PMAA, users can track customer requests and task producers directly, both in house and outside the Agency.

In short, PMAA reports on and allows users to react to current conditions that are present within their business element. The business elements can span three tiers of classification: unclassified, secret and top secret. PMAA supplies the necessary security gates to transport appropriate information up and down the chain, thus making the most and best use of any available information.

Since its initial release, PMAA has been upgraded several times, with each new release providing additional functionality, such as access to commercial imagery and access at different classification levels. These improvements allow users to search for imagery and data relevant to the current task through multiple security levels.

In its latest iteration, PMAA has 14 subsystems that manage a number of interacting processes. These subsystems manage customer requests, production planning, end-to-end production, data exchanges, source discovery, source package preparation, purchase orders, supply planning (national or commercial imagery), message transfers between classification levels, access to business intelligence, resources and program planning based on a variety of inputs, contracts management, administration and inventory.

The last expected release of PMAA prior to its incorporation into the GeoScout baseline is being deployed in several increments this year and next. These incremental improvements affect seven of the 14 subsystems.

Recognized as the corporate solution for managing mission requirements and product resources, PMAA provides an integrated geospatial tool set for both NGA and the customer community. Since the current PMAA capabilities form the basis for the GeoScout product, the PMAA and GeoScout teams are collaborating closely to ensure improving information superiority and delivering the future now.

Industry

ISO Standards Drive Higher Levels of Performance

By Dr. Thomas H. Holzer and Dr. Frederick A. Turman

With three certifications by the International Standards Organization (ISO), NGA's enterprise operations have attained an unprecedented level of performance. The ISO is a non-governmental organization, based in Geneva, Switzerland, that links national standards institutes in 148 countries.

As reported in the May-June 2005 Pathfinder, NGA became the first member of the Intelligence Community to attain ISO 9000 performance. The ISO 9000 series provides a generic set of management controls and is a widely accepted international standard for high-quality management systems.

Now certified at the ISO 9001 level, NGA also gained ISO 15000 certification, which defines requirements for managing information technology services. And it has achieved ISO 27001, an internationally recognized methodology to evaluate, implement, maintain and manage information security.

NGA is the first agency in the Department of Defense to achieve ISO 15000 certification and the first organization—public or private—in the United States to achieve all three certifications.

Impact of Certifications

These industry standards and their metrics programs drive networks and data centers within NGA's Enterprise Operations Directorate (E), which is responsible for the Agency's information technology infrastructure.

The standards help NGA serve its customers better, give the taxpayers a better return on their money and drive NGA towards the transformation necessary to meet the threats America faces. Some of the milestones achieved along the way include:

- Developing processes, procedures and performance metrics
- Building an internal audit program to detect defects before they reach the customer
- Implementing a knowledge repository to standardize procedures
- Establishing a performance management program to track customer service results

ISO certifications serve as a baseline to build the improvements and contribute to a culture of continuous improvement; they help NGA to develop an infrastructure that is fully digital, self-aware, self-sustaining and self-healing.

Audit Proves Favorable

NGA's higher operational level, attained through certification, received confirmation in an 11-day audit. The final report praised E for displaying "strong audit evidence of a system meeting its established goals" as well as "strong management commitment." The three-member audit team also lauded E at an out-briefing for the high level of enthusiasm among its government and contractor personnel and leadership.

The auditors found only three minor "non-conformances" against applicable standards and no major non-conformances. Such a low number of non-conformances

is practically unprecedented for any first certification attempt. According to research conducted by NGA's quality-management consultant, an organization similar in size and scope to NGA usually sustains 25 to 30 non-conformances during an initial audit.

Certification is a momentous accomplishment, but it is more a means than an end. It simply says that we have a working framework upon which to build and improve the way we provide services and products for our customers. In deed, it has taken three years to document, implement and devise methods to measure E's 19 processes, including the development of quality manuals and tools that support internal auditing and metrics automation.

What's Next?

It will take a little more time for E to emerge as a world-class, process-driven organization that serves NGA customers and consistently satisfies validated mission requirements with speed and predictability. The ISO certifications tie E's strategic goals to its transformation strategies and each strategy to a measurable objective relating to the Agency's future end-state as a provider of world-class information technology infrastructure.

Certification is the first, and one of the biggest, steps E had to take in advancing NGA's mission capabilities. It's also the best indicator to date of E's collective dedication and enthusiasm for improving the way we service NGA's internal and external customers today, tomorrow and beyond.

ISO Certification

The International Organization for Standardization (ISO) is a non-governmental organization, based in Geneva, Switzerland, that links national standards institutes in 148 countries. ISO 9000 certification ensures that an organization has the ability to create a required product or service from appropriate inputs in a systematic, repeatable way. Adopted by the business community more than 15 years ago, standards like those of the ISO 9000 system are now increasingly being required of government agencies.

New Campus East

Planning for Announced Site Begins

By Gail Cherochak

NGA moved one step closer to implementing 2005 Base Realignment and Closure (BRAC) Act provisions July 27. Announcing that its master planning contractor had recommended a preferred site plan for the realignment of Fort Belvoir, Va., the Army recommended the Engineer Proving Ground (EPG) as the new site for NGA. The EPG is northwest of the main Fort Belvoir post, where NGA is scheduled to consolidate its designated eastern sites in 2011.

The Army's preferred site plan, as well as alternative plans, will be documented and evaluated in an environmental impact statement (EIS) as the next phase of the National Environmental Policy Act (NEPA) process. An integral part of this analysis will be the assessment of the impacts to current and planned transportation infrastructure. The Army will prepare a draft EIS and make this available to the public for comment early next year. NGA is participating in the EIS process, which is expected to take one year and must be completed before construction can begin. If the EIS process concludes on schedule, enabling the Army to issue its Record of Decision and update its Real Property Master Plan, construction of New Campus East could begin as early as the autumn of 2007. Occupancy is planned to start in the spring of 2010 and continue steadily up to the BRAC deadline of Sept. 15, 2011.

Now that this preliminary recommendation has been made, NGA can proceed with planning its New Campus East around the EPG's location, terrain and transportation features. NGA's joint-venture architect/engineer firms have begun designing NGA's New Campus East site and buildings. Since April they have developed numerous design concepts and hosted "charrettes"—architectural design sessions—to lead NGA personnel through the process of selecting design concepts that will meet the Agency's mission needs. Concurrent with these charrettes are ongoing interviews with NGA's organizations, leaders, focus groups and employees to collect space requirements, technology needs, ideas for innovation and collaboration, plans for growth and accessibility requirements for people with disabilities. This information, combined with hundreds of suggestions already received from the workforce, is being used to design the vision of what NGA should be in 2011.

NGA has involved the workforce in planning for the new campus. It used feedback provided on three proposed architectural concepts to help select the one concept that the joint venture will further develop. Although this design concept will undergo many more changes and improvements, it is safe to say that New Campus East will look nothing like the Agency's older eastern sites. As NGA celebrates 10 years of GEOINT this fall, NGA is already looking ahead to opening the ultimate gift for the 15th anniversary: a new home for GEOINT.

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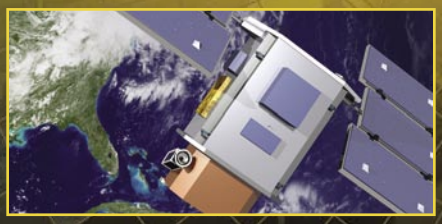

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